APR 6 1938

Industrial Standardization

and Commercial Standards Monthly

March

See Article on Page 49

1938

International Cooperation

AN important function of the American Standards Association is to represent the interests of American business in international standardization problems. To perform this task for American industry, the Association is a member of the International Standards Association which serves as clearing-house for the standardization work of the world just as the ASA and other national bodies serve in their own countries. The ASA is also a member of the International Electrotechnical Commission.

Manufacturers whose products are competing in a world market have sometimes found this representation in international work particularly valuable. For example, the 1936 ISA meetings at Budapest brought about world-wide adoption of the American Standard for 16 millimeter sound film developed by the American Society of Motion Picture Engineers. Again, the ISA committee on Units and Methods of Measurement, part of the international project on acoustics, last summer adopted a substantial portion of the American Standard for Noise Measurement as a recommendation for international uniformity in practice. The development of inch-millimeter conversion tables, the international standardization of bearings, etc., are other examples of what can be accomplished through cooperation with the other industrial countries of the world on standardization.

Today American foreign trade sells:

One of every four agricultural implements
One of every three office appliances
One of every two crates of dried fruit
One of every two bales of cotton

Most of the automobiles, busses, trucks, and tractors sold abroad are of American manufacture.

American steel, chemicals, machine tools, etc., find their way into every world market.

These facts demonstrate the importance of world standards to American businessmen.

The American Standards Association is cooperating in the work of 17 of the technical committees of the ISA and it keeps its members informed about the activities of the others. For two of these international projects, Petroleum Products and Photography, the ASA holds the secretariat. In the fields of radio, electrical insulating materials, and other electrical projects, some of them of considerable importance to our own industries, the American Standards Association cooperates with the International Electrotechnical Commission.

Through these close international contacts, the ASA offers American industrial groups a carefully developed mechanism which has overcome many of the nationalistic restrictions against the sale of American products overseas.

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RUTH E. MASON, *Editor*

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ASA

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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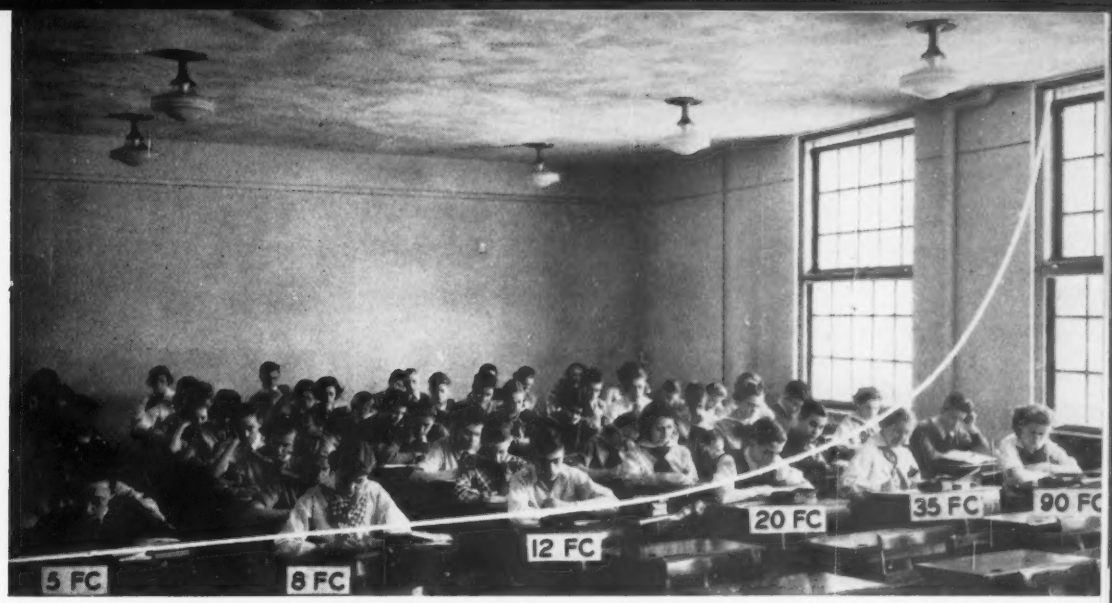


Light meters show variations in intensity from 5 foot-candles to 90 foot-candles in this schoolroom

New Recommendations on School Lighting, For Easier Seeing, Based on Research

by

Henry B. Dates[1]

Chairman, Sectional Committee on Lighting of School Buildings

THE first "Code of Lighting School Buildings" was issued by the Illuminating Engineering Society in 1918. Scientific advances in the theory and art of illumination necessitated complete revisions in 1924 and 1932. The Illuminating Engineering Society, the American Institute of Architects, and the American Standards Association through its sectional committee on school lighting, cooperated in these revisions and they were approved as American Standards by the American Standards Association.

Scientific reseach, by ophthalmologists, physicists, physiologists and other skilled workers, has added materially in the last few years to our fundamental knowledge on the relations between light and seeing. With this advance in science there has come an increasing appreciation by the public that not only is light necessary for seeing but that in order to conserve eyesight and to perform the

[1]Case School of Applied Science, Cleveland, Ohio.

Our Front Cover

Care of children's eyes now starts in the kindergarten. Even before a child can read, his eyesight is tested. These children are showing their teacher how the "legs" of the figure look to them. ***Courtesy National Society for the Prevention of Blindness.***

Outdoors, even in shadow, the light intensity registers 450 foot-candles. Intensely bright sunlight sometimes measures as high as 10,000 foot-candles

daily visual tasks with accuracy, speed, and comfort, the amount of light should be at least above certain minimums and the lighting of high quality. Further, various studies have shown an intimate relation, in school work, between mental achievement and lighting. These developments, together with the accompanying advance in lighting practice and equipment, have made necessary a new revision to keep pace with present-day needs.

In this new edition the primary purpose has been to establish criteria of good illumination for the guidance of architects, engineers, school officials, and others interested in the conservation of children's vision and the efficiency of pupils and teachers.

Approved by ASA

The "American Recommended Practice of School Lighting" is a revision of the "Standards of School Lighting, 1932". The revision was carried out under the rules of procedure of the American Standards Association, and has been officially approved by the ASA. In making this revision the sponsor organizations—the Illuminating Engineering Society and the American Institute of Architetcts—have had the collaboration of the Sectional Committee on School Lighting, a committee which included competent eyesight specialists, physicians, research workers, public health officials, architects, and engineers.

To the end that the many requests for more detailed information on all phases of school lighting may be met, this edition of the "American Recommended Practice of School Lighting" has been materially enlarged and the first section is devoted to a discussion of the seeing problem and the relation of seeing and lighting. Seeing is by far the most important sense through which students learn. Obviously, eyes capable of vision are necessary, but lighting is the absolute condition of all vision and should, therefore, be provided in such quality and quantity as to enable the eyes to accomplish their tasks with accuracy, speed, and ease, and without danger to vision. Modern educational methods are largely visual and therefore impose upon the eyes of school children tasks which are severe and often prolonged. To avoid serious injury to young eyes, which are in a formative period, it is especially essential that in school buildings, in which these young eyes are

daily called upon to undertake intensive visual work, the best lighting possible should be provided.

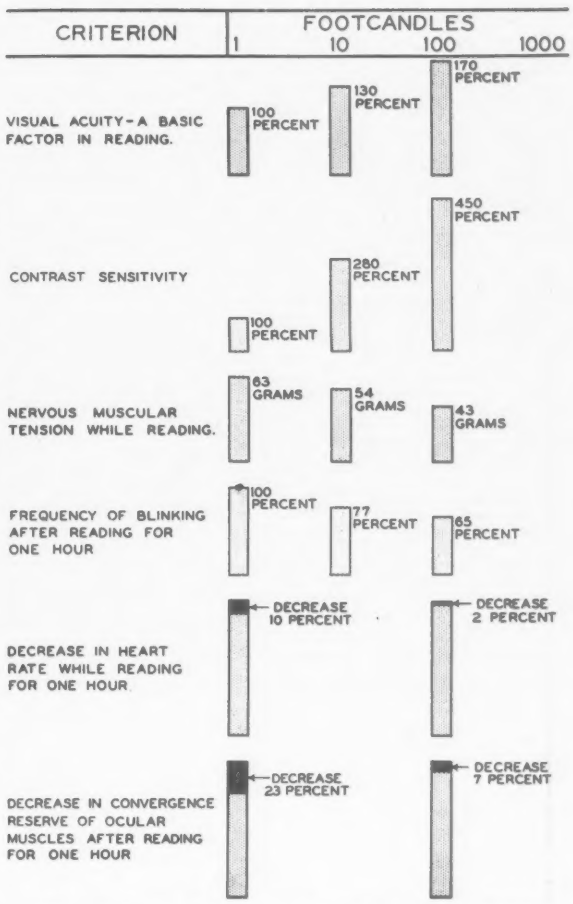
Light Eases Seeing Task

In Part I it is pointed out that seeing is not an instantaneous process and that, other things being equal, a lesson is learned more quickly and with less expenditure of energy if the conditions of the eye and of the illumination are such that visual images are registered rapidly and clearly; that school room ligthing should be prescribed and appraised in terms of quality and quantity, and that the results of carefully conducted tests have proved definitely that the seeing load, imposed by our present-day difficult eye tasks, and prolonged hours of close application to seeing work, is lightened by increasing the illumination on the work. The tests cited also show that the more exacting the eye task, in general the more illumination must be supplied for the same ease of seeing, and that the illumination should be relatively higher for sight-saving classes and work such as encountered in drawing and sewing classes than for the classroom tasks of reading and study. Further, the average classroom contains many children who have visual defects—hence it is essential that in setting a criteria for the illumination of classrooms the compensation that may be given these children by higher illumination should be considered.

In connection with this discussion references are given to some of the research studies on which the conclusions noted are based.

Concerning the amont of illumination necessary to carry on seeing tasks with ease and accuracy and avoid unnecessary fatigue, the previous edition recommended for classrooms a range of 12-8 footcandles. The rapid advances in the knowledge concerning the relationships between lighting and seeing, and in improved lighting practice resulting therefrom, however, have resulted not merely in general use of the 12 footcandles at the top of the range, but lighting practice has gone beyond this, with values of 20 footcandles and above made available in many school systems. The appreciation that the visual tasks in schools need more light has resulted in the recommendation for classrooms being changed to a minimum of 15 footcandles. In view of the severe visual tasks involved in the school work of today and the great mass of sustaining data indicating the desirability of much higher values, the increase from a range of 12-8 footcandles to a minimum of 15 footcandles seems very conservative.

There is no room for doubt that good lighting is an important factor in preventing eye fatigue and in developing desirable physiological and pyschological results. On the other hand, poor



From American Recommended Practice on School Lighting

How different light intensities affect the reader

lighting conditions may so affect the accuracy, quickness, and ease of seeing as to retard the progress of pupils and reduce the efficiency of the teacher. If, through a lack of adequate facilities, students have to repeat work in which they have failed, the individual, the community, and society in general suffer a heavy loss.

In Part II are discussed the factors which affect lighting and seeing. The quality of lighting, whether natural or artifical, is important from both the psychological and physiological viewpoints. Glare, diffusion, direction, and distribution of light have significant effects on seeing conditions, which is to say that the amount of illumination is by no means the only factor to be considered.

As quality of lighting is given a very important place, not only should there be no bright sources in the field of vision which cause discomfort or annoyance or eye strain, but reflected glare

as evidenced when light sources or images are reflected from shiny surfaces or glazed paper, glossy desk tops, etc., should be avoided. The light should be spread evenly over the room. To secure the best economic utilization with artificial lighting, attention should be given to the reflection values and the finish of ceilings and walls. At the same time, study should be made of sidewall color and decoration so that the classroom may be a more inviting and livable place for children and less suggestive of the factory.

In Part III the natural lighting of school rooms is discussed and the problems involved in natural lighting are given due consideration. Included are such problems as that of introducing sufficient light into the room in such a manner as to give good illumination to every student when there is an overcast sky outdoors; the problem of eliminating glaring contrasts of brightness within the classrooms; the problem of providing means of controlling daylight to prevent glare when the sun shines into the room and the orientation of the building in relation to its effect upon the interior lighting. The practical impossibility of providing a uniform daylight illumination in the classrooms with our present-day building design is pointed out.

Need Lights on Bright Days

Suggestions in Part IV, under artificial lighting of school rooms, show how it is usually necessary to supplement the natural lighting with artificial lighting even on bright days, in a large majority of our school rooms, if we are to provide children with the recommended values of light for their visual tasks.

Since no individual can determine accurately by physical observation when more light should be added in a room or when artificial lighting can be spared, attention is called to practical equipments utilizing the photoelectric relays which can be relied upon to automatically note the changes in daylight and make corrections when needed.

In addition, information is given on the types of lighting systems and their characteristics, as well as the effect of the size and shape of school rooms upon the illumination.

Attention is also given to rooms for other functional purposes in the school system where special lighting requirements are needed, such as sight-saving classrooms, libraries, drafting rooms, art rooms, sewing rooms, laboratories, shops, cafeterias, auditoriums, gymnasiums, swimming pools, etc. In this connection it is not always realized that many of the games and competitions for which school gymnasiums are used today, and in which the ability to see quickly and accurately is of the greatest importance, require as high a value of illumination in the gymnasium as in the classroom and that experience indicates that from the safety standpoint in the prevention of accidents in swimming pools equally good illumination is required there.

Because of the many requests for some information on the lighting of outdoor playgrounds, a

Test Shows Children Gain With Higher Light Levels

One of the tests on which the committee based its recommendations for a minimum of 15 foot-candles for study rooms was carried out by the Board of Education of Cambridge, Mass., with the cooperation of the Cambridge Electric Light Company. For this test, two adjoining rooms were selected, both newly painted. The daylight intensities were measured at different times throughout the year and were found to be the same for both rooms, varying from a high of 160 foot-candles on the first row of desks near the window on a cloudy bright day to a low of 2 foot-candles on the sixth row of desks away from the window on a cloudy dull day.

In one room a photronic relay was set to maintain a minimum light level of 20 foot-candles on the desks. In the other room, the lights were left unchanged, giving from 4 to 6 foot-candles on the desks.

The children were carefully tested and two groups equally balanced in reading age were used in the two rooms. The teachers in the two rooms alternated, each teaching half of the subjects to both classes. They were instructed to use the lights in the uncontrolled room exactly as they always had been used.

The first tests of the children were made at the beginning of the school year. The final check, made at the end of the school year, showed that the pupils in the room with a controlled light of 20 foot-candles minimum had gained over the pupils in the more poorly lighted room by 10 per cent in general achievement, by 28 per cent in reading ability.

The average illumination in this library, Edgewood School, Ashtabula, Ohio, is 20 foot-candles

simple discussion of lighting for outdoor games, with illustrations, is included.

The attention, particularly of architects, engineers, and those responsible for the maintenance of school buildings, is directed to Part V and the discussion therein of the wiring of school buildings and of the capacity provisions which should be made in view of the trend toward higher illuminations. The high cost of correcting inadequate wiring conditions as compared with the cost of initially installing adequate capacity is emphasized.

Because of the great interest in this subject, there follow references to some of the recent important scientific work and readily available material relating to vision and seeing and the lighting standards recommended.

Some Eye Health Problems in the Public Schools—Discussion by Dr. Edward Jackson, M.D., Professor Emeritus of Ophthalmology, University of Colorado—PROCEEDINGS OF THE 1936 ANNUAL CONFERENCE OF THE NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, p 97

Conserving the Eye Health of Industrial Employees—Dr. Paul G. Moore, M.D., Wesern Reserve Medical School—PROCEEDINGS OF THE 1936 ANNUAL CONFERENCE OF THE NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, pp 41-42

Muscular Tension Resulting from Glare — Dr. Matthew Luckiesh, D.Sc., and Frank K. Moss, E.E., Lighting Research Laboratory, General Electric Co.—JOURNAL OF GENERAL PSYCHOLOGY, 1933 (Vol. 8), p 455

What is Wrong With our 50-Foot-candle Installations?—Ward Harrison, Director of Engineering, Nela Park Engineering Department, General Electric Co.—TRANSACTIONS OF THE ILLUMINATING ENGINEERING SOCIETY, February 1937 (Vol. XXXII, No. 2), p 208

Visual Perceptions Under Modern Conditions—Dr. R. J. Lythgoe, M.A., M.D., D.Sc., University College (London)—TRANSACTIONS OF THE ILLUMINATING ENGINEERING SOCIETY (Great Britain), January 1936 (Vol. I, No. 1), p 3

Lighting the Lamp of Learning—Winifred Hathaway, Associate Director of the National Society for the Prevention of Blindness, Inc. —PROGRESSIVE EDUCATION, January 1937

Guarding the Sight of School Children—Dr. Edward Jackson—THE SIGHT-SAVING REVIEW, December 1936 (Vol. VI, No. 4), p 243

Visibility — Its Measurement and Significance in Seeing—Dr. Matthew Luckiesh and Frank K. Moss —JOURNAL OF THE FRANKLIN INSTITUTE, October 1935 (Vol. 220, No. 4), p 431

A Decade's Advance in Ophthalmology—Dr. Wm. H. Wilmer, M.D., L.L.D., Sc.D., Professor Emeritus of Ophthalmology, Johns Hopkins University—PROCEEDINGS OF THE INTERNATIONAL MEDICAL ASSEMBLY MEETING at Detroit, Michigan, October 14-18, 1935

SIGHT CONSERVATION AND SIGHT-SAVING CLASSES — BULLETIN No. 96 (1935), Department of Public Instruction, Commonwealth of Pennsylvania

LAWS AND RULINGS OF COMMISSIONER OF EDUCATION AND MINIMUM REQUIRMENTS FOR APPROVAL OF BUILDINGS (1936)—Department of Education, State of Maine

STANDARDS OF SCHOOL LIGHTING—Approved by the Research Committee, Sight Conservation Council of Northern California

STUDIES IN NATURAL ILLUMINATION IN SCHOOL ROOMS, PARTS I & II (January 1926), Senior Surgeon Taliaferro Clark & Physicist Arthur F. Beals, and PART III (November 1929), Physicist Arthur F. Beals, U. S. Public Health Service—Public Health Bulletin No. 159 & 188 respectively

Better Light for the Classroom—Alston Rodgers, Illuminating Engineer, General Electric Co.—THE ARCHITECTURAL RECORD, June 1936, p 504

AN INTRODUCTION TO THE PROBLEMS OF SIGHT CONSERVATION — A Handbook for Teachers & School Executives—Dr. R. S. French, Principal of the California School for the Blind and President of the Sight Conservation Council of Northern California — STATE OF CALIFORNIA DEPARTMENT OF EDUCATION BULLETIN, No. 3, February 1, 1937

THE SCIENCE OF SEEING—Dr. Matthew Luckiesh and Frank K. Moss —D. Van Nostrand Co., New York —1937

Suggested Regulations for Lighting Sight-Saving Classrooms, (Ohio) State Department of Education, Division of Special Classes — TRANSACTIONS OF THE ILLUMINATING ENGINEERING SOCIETY, September 1937 Vol. XXXII, No. 8), p 807

Light in the Schoolroom—Dr. Edward Jackson—THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, September 11, 1937, (Vol. 109, No. 11), p 814

Lighting in the Schoolroom — Dr. Harry S. Gradle, M.D., practicing ophthalmologist, Chicago—HYGEIA, December 1937, p 107

Lighting Standards—Dr. Walter B. Lancaster, M.D., practicing ophthalmologist, Boston — AMERICAN JOURNAL OF OPHTHALMOLOGY, December 1937, (Series 3, Vol. 20, No. 12), p 1221

Teacher Practices and Classroom Conditions Related to the Eye Health of School Children—Dr. Anette M. Phelan, Ph.D., Associate in Health Education, National Society for the Prevention of Blindness, Inc.—SCHOOL MANAGEMENT, January 1938, p 152

The Measurement of Visual Acuity —(Visual Capacity—with special reference to visual acuity)—By R. J. Lythgoe, M.A., M.D. A Report of the Committee upon the Physiology of Vision of the Medical Research Council of Great Britain.

What Experts Say About Eyes and Light

"New Recommendations Are Step in Right Direction"

by

Richard H. Lee

U. S. Public Health Service

THE new school lighting recommendations are a commendable step in the right direction. In our opinion they are conservative recommendations. We believe that conditions inferior to those provided in the new standard are detrimental to the welfare of pupils.

Guard Vision of School Children To Prevent Later Eye Ills

by

Edward Jackson

Professor-Emeritus of Ophthalmology, University of Colorado

ACCORDING to recent statistics, seventy-two per cent of the blind persons in the United States (63,489 were reported in the 1930 Census) are blind from preventable causes. For every one now completely blind one hundred are going toward blindness; and a much larger number are limited and handicapped by defects of vision, of which they may not be conscious. For

School Lighting Committee Represents Eyesight Specialists, Lighting Experts

A representative committee including eyesight specialists, physicians, research workers, public health officials, architects, and engineers made use of actual tests and studies of lighting in deciding what lighting conditions to recommend. Members of the Sectional Committee on School Lighting, working under the leadership of the Illuminating Engineering Society and the American Institute of Architects, are:

H. B. Dates*, Illuminating Engineering Society, *Chairman

William C. Brown*, Illuminating Engineering Society, *Secretary

American Institute of Architects, *Theodore I. Coe*
Illuminating Engineering Society, *H. B. Dates, Willard C. Brown (alt.)*
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American Public Health Association, *Leonard Greenburg, Joel I. Connolly (alt.)*
Electric Light and Power Group, *J. C. Fisher, Alexander Maxwell (alt.)*
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National Safety Council, *G. H. Stickney*
National Society for the Prevention of Blindness, *Winifred Hathaway, Lewis H. Carris (alt.)*
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U. S. Department of the Interior, Office of Education, *Alice Barrows*
U. S. Department of Labor, Women's Bureau, *Bertha Nienburg*
U. S. Treasury Department, Bureau of the Public Health Service, *Richard Lee*
Member at Large, *LeGrand Hardy*

the majority of people, the severe tax on the eyes during school years is the greatest stress and danger to the sight that they are likely to encounter.

Effective guarding of the vision of school children will prevent most of the blindness of old age; and among those who do not become blind, it will prevent much visual and nervous disability and chronic ill health. Our eyes are not developed to do the close, constant work now demanded by our educational processes. More testing and thinking must be done before we can understand all it means to shut the child from outdoor natural light and set it to do the difficult eye work called study. School lighting is one of the major problems in protecting the future of our children's eyes.

The new American recommended practice of school lighting is better than the lighting code that it supersedes. But we must remember, it represents the minimum requirements. It indicates only the least light necesary to give children a fair chance to use their eyes in study. It will be better if they can have always decidedly more light.

Recommended Intensities Desirable For Eye Comfort, Speed in Seeing

by

Winifred Hathaway

Associate Director, National Society for the Prevention of Blindness

SEEING is an exceedingly complicated process. In considering the important part illumination plays in relation to the eyes and to the task they are called upon to perform, not only must the question of intensity be given careful attention, but equally serious thought must be directed to the type of illumination. Whether the light be natural or artificial, distribution, dif-

fusion, direction, and avoidance of glare are of paramount importance.

It is an almost impossible task to determine just how much light and just what type of illumination are best adapted to meet the needs of varying eye conditions and to aid in accomplishing the innumerable tasks that eyes are called upon to perform. It is inevitable that the decision must be more or less an individual one. Venturesome, indeed, would be any person or any group that would attempt to set up definite and unalterable limitations. It therefore seems particularly noteworthy that the Committee appointed to prepare material that might be most helpful to school authorities in determining desirable illumination, should, after long deliberation, present its findings under the title, "American Recommended Practice of School Lighting."

The committee has made a recommendation of a minimum of 15 foot-candles based on the conclusion that such an intensity is desirable for eye comfort and ease and for accuracy and speed in seeing. These are two most important factors in an educational program, the carrying out of which is still dependent chiefly on the sense of sight. Recommendations relating to the control of illumination—natural and artificial—are based on the same principle, and like the former, are intended to serve as a guide to those who may desire help in solving the particular problems of illumination which are to be found in their own school systems.

Mining Correlating Committee Elects Harrington

Dan Harrington, chief of the Health and Safety Branch, U. S. Bureau of Mines, was elected chairman of the Mining Standardization Correlating Committee, general administrative committee supervising mining standardization activities of the American Standards Association, at its Annual Meeting February 16. At this meeting, Dean E. A. Holbrook, College of Engineering, University of Pittsburgh, who had served as chairman of the correlating committee since its organization in 1920, announced his retirement. During his long period as chairman, Dean Holbrook's personality and leadership have contributed toward harmonizing varying viewpoints on standardization activities in the mining field. Dean Holbrook continues as a member of the Executive Committee of the Correlating Committee.

Other officers elected are Lucien Eaton, Champion, Michigan, and Ruth N. Hosler, Pennsylvania Compensation Rating and Inspection Bureau, vice-chairmen; J. J. Rutledge, Director, Maryland Bureau of Mines; and G. B. Southward, American Mining Congress.

Several mining projects showed progress during 1937, the technical committees reported to the MSCC.

Efforts during the year to harmonize the viewpoints of two organizations which had objected to the original wording of the proposed safety code for coal mine ventilation resulted in minor changes in the text, it was reported. The proposed code was adopted by the American Institute of Mining and Metallurgical Engineers in 1936 and was submitted at that time to the American Standards Association. When the Mining Standardization Correlating Committee voted on the proposal, however, it was found that two organizations objected to the wording of several sections. Now that changes have been made in the proposed standard the MSCC has again authorized a vote of the Committee to determine whether in the opinion of the Committee members the standard should be submitted to the ASA Standards Council.

In connection with the project on Specifications for Trolley, Storage Battery and Combination Type Locomotives for Coal Mines (M25) a set of standards covering the design and details of locomotive construction was published recently, the National Electrical Manufacturers Association reported. These standards are known as N. E. M. A. Mining and Industrial Locomotive Standards, 38-48. Additional work to develop recommendations on conditions affecting the use of various types of mine locomotives will be carried out under the direction of the American Mining Congress, it is expected.

The code for construction and maintenance of ladders and stairs for mines was reviewed during 1937 and it was decided that a revision is not necessary, according to a report of the American Mining Congress.

The major part of the work originally undertaken by the Sectional Committee on Classification of Coals was completed when the two standards for classification of coals by rank and by grade were approved as American Standard, said A. C. Fieldner, chairman of the committee. A subcommittee is now considering whether it would be desirable to extend the work of the committee to include classification of coals on the basis of value.

Safety Code Correlating Committee Re-Elects Adams

L. F. ADAMS, assistant to the vice-president, General Electric Company, Schnectady, was re-elected chairman of the Safety Code Correlating Committee, general committee supervising the safety code work of the American Standards Association, at its meeting February 1. Mr. Adams represents the National Electrical Manufacturers Association on the committee. He has been a member of the committee since 1928.

H. A. Schultz, assistant to vice-president, U. S. Steel Corporation, representing the American Iron and Steel Institute, was re-elected vice-chairman; and Cyril Ainsworth, assistant secretary, American Standards Association, was re-elected secretary of the committee.

Other members of the Executive Committee are:

W. Dean Keefer, director, Industrial Division, National Safety Council, Chicago, representing the National Safety Council

G. P. Keogh, industrial code referee, New York Department of Labor, representing the International Association of Industrial Accident Boards and Commissions

W. S. Paine, manager, Engineering and Inspection Department, Aetna Casualty and Surety Company, Hartford, Conn., representing the National Conservation Bureau

C. E. Pettibone, vice-president, American Mutual Liability Insurance Company, representing the National Association of Mutual Casualty Companies

V. A. Zimmer, director, Division of Labor Standards, U. S. Department of Labor, representing the Division of Labor Standards

At its meeting the committee made recommendations to the American Standards Association for action on several standards, including the Fire Protection Code for Blower and Exhaust Systems, Safety Code for Brakes and Brake Testing, Safety Code for Traffic Signals, a proposed Advisory Committee on highway traffic, a proposed project on Specifications for Accident Prevention Signs, the revision of the American Standards of School Lighting, the revision of the safety code on safety glass, and on the National Advisory Committee on Toxic Dusts and Gases. The Standards Council is considering the proposals of the Safety Code Correlating Committee, and has already taken action on the revision of the standards for school lighting, and of the safety code on safety glass.

ISA Meetings Scheduled For June 20-July 3

A series of meetings of technical committees of the International Standards Association will be held in Berlin during the week of June 20 and 27 this year.

Meetings of the following committees have been proposed:

Acoustics (electro-acoustics, musical acoustics)
Aeronautics
Automobiles
Cinematography
Coal
Drawings
Machine tools
Metric screw threads and threaded products (thread tolerances, lock washers, wood screws)
Paints (red lead, etc.; covering power; determination of zinc content, etc.; light-fastness of lithopone)
Petroleum products
Pipe lines and fittings
Preferred numbers
Sprinkler installations
Standard diameters
Steel and iron
Terminology
Textiles
Tools
Welding

A meeting of the ISA Council, governing body of the Association, is scheduled for July 1. P. G. Agnew, secretary of the American Standards Association, has been appointed by the ASA Board of Directors as the United States representative on the Council. Members of the Council for 1938 include one representative from the national standardizing organizations of Belgium, Finland, France, Germany, Italy, and the United States, and the president of the ISA, Nils Fredriksson. Mr. Fredricksson is president of the national standardizing body in Sweden. The United States will be represented on the Council for three years.

W. D. Smith Named Director Of New York Safety Council

Walter Dent Smith, president and manager of Delaware Safety Council for the past ten years, was appointed executive vice-president of the Greater New York Safety Council at a meeting of the Council's Board of Directors March 4. Mr. Smith succeeds Julien H. Harvey who resigned to become managing director of the National Conservation Bureau, New York, a member of the American Standards Association.

DUPLATE
SAFETY
9 136
AS WS

The letters "AS" in this label mean American Standard; the WS indicates that this piece of glass is for a windshield

Sandblasting the trademark on a finished light of safety glass

Photo from Pittsburgh Plate Glass Co.; Courtesy Automotive Industries

American Standard for Safety Glass Is Basis for State Regulations

Survey shows that 32 states protect citizens by requiring safety glass in motor vehicles; 20 have adopted American Standard tests and specifications in full

IN 1927 the first "safety glass" was used for the windshields of automotive vehicles. By 1937 the automotive industry was accounting for 75,000,000 square feet of laminated safety glass alone.

This swiftly growing industry raised many problems. The use of safety glass in automobiles became a subject for legislation, until by 1935 eight states had adopted requirements for approval of safety glass and had set up tests of one sort or another to determine its accceptability. In some of these states the test requirements varied widely, to the confusion of automobile manufacturers, glass makers, state administrators, and users of automobiles. With legislation in other states pending it seemed imperative to all of these groups to set up some sort of a uniform reference standard for the guidance of both manufacturers and administrators.

How safe was safe? When a man bought an automobile equipped with safety glass what could he expect? Would the glass break under impact. Would it shatter? How hard a blow should it withstand? Would it discolor, spot, or separate under extremes of temperature or varying weather conditions, thereby distorting the vision of the driver? These were some of the questions that had to be answered in defining "safety" glass.

In June 1934, representatives of automobile companies, glass manufacturers, state administrators, insurance companies, and safety experts met together under the auspices of the American Standards Association to work out a series of standard tests and requirements for safety glass which were completed by November of the following year These tests show the degree of strength and freedom from shattering which may reasonably be expected. They specify tests for discoloration and separation of the layers of the glass. They recommend testing for strength both by the use of sharp projectiles and inert weight, designating how heavy a weight shall be used in testing and from what height it shall be dropped.

As a result of this work, 20 of the 32 states which now require the use of safety glass in automobiles have adopted the American Standard Safety Code. Of the others, two states have no requirements for determining when safety glass is "safe". Two specify in general terms that the glass must not shatter. One indirectly refers to the American Standard in its regulations, and six have developed their own special state regulations for safety glass.

In order that the car owner himself may be assured that the glass in his windshield complies with the American Standard, arrangements have been made for labeling glass that meets the re-

ASA Approves "AS" For Safety Glass Labels

Recognizing the wide acceptance of the safety code for safety glass, and to take care of a revision of the labeling features, the American Standards Association approved the code again this year, raising it from the status of American Tentative Standard to American Standard.

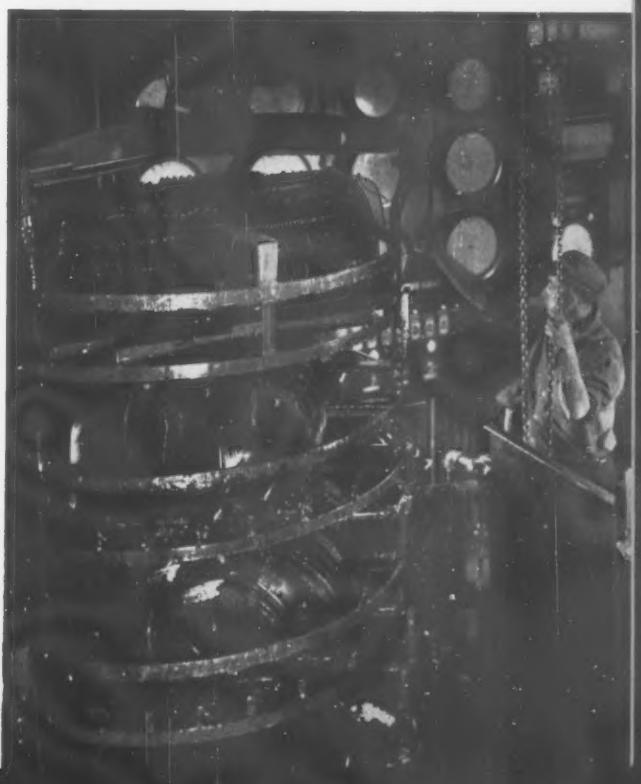
As a result of the changes, the initials "AS" will appear on safety glass which meets the requirements of the code. These initials represent the newly approved abbreviation for the words "American Standard."

Copies of the American Standard Specifications and Methods of Test for Safety Glass for Motor Vehicles Operating on Land Highways (Z26.1-1938) are available from the American Standards Association at 20 cents each.

quirements of the code with the words "American Standard", or with the initials "AS".

The chart on the following pages shows the results of a survey as to the use of this code by the states. The fact that seven states base their acceptance of safety glass on use of the American Standard label alone is indicative of the confidence placed in the provisions of this standard. Four other states require use of the label but also demand proof that tests to determine compliance with the standard have been carried out.

As a basis for uniform regulations for interstate busses and trucks, the Interstate Commerce Commission has recognized the American Standard. The I.C.C. regulations, however, admit only the laminated type of glass in the windows for which safety glass is required.



Above: **A metal template is used to cut the proper shape and size of a windshield**

Center: **Assembling the glass sandwich. The operator is placing the sheet of pyroxyline between two pieces of polished plate glass**

Below: **Glass emerging from the "autoclave" where pressure and heat have laminated the plate glass and binder into a single pane**

Above: Photo from Libby-Owens-Ford, courtesy Automotive Industries; Center and below: Courtesy Pittsburgh Plate Glass Co.

	Throughout in cars for hire regardless of date.					to provide against shattering on all cars manufactured after July 1, 1934.		
Minnesota	Yes, throughout in passenger cars, trucks, and busses.	Law states: "safety glass" shall be so fabricated as to substantially prevent shattering.[1]	(no reply)					Only laminated type of glass will be approved by the Commissioner for use in windshields; heat - treated glass for use in other parts of the vehicle.
Missouri	Yes, throughout in passenger cars and busses, also trucks if passengers are carried for hire.	Yes	No	Missouri specifications are the same as those of the state of Pennsylvania.		Yes	No	
Nebraska	Yes, throughout in passenger cars, trucks, and busses.	Yes	No, not in present form.	Nebraska has special state specifications.	No, but should be.	Yes	No	Heat-treated and wire glass are prohibited in passenger cars, trucks and busses.
New Hampshire	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		No	Yes	Yes, National Bur. of Stds. and Electrical Testing Lab.	American Standard is followed.
New Jersey	Yes, passenger cars, trucks, and busses.	Yes	Not as yet.	New Jersey has special state specifications.		Not as yet.	Yes	Wire glass is prohibited. New Jersey contemplates adoption of Am. Std.
New York	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes, but must have evidence of passage of test.	Yes	Yes	No prohibiting list.
North Carolina	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes			Yes	Yes, National Bur. of Standards.	
Ohio	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes, American Standard has been adopted. Tests conducted on tentative edition of Nov. 22, 1934.		Ohio reserves right to make check tests Registrar of Motor Vehicles deems necessary and to make complete tests on new brands.	Yes	Ohio does its own testing.	Heat-treated glass is prohibited in windshields.
Oklahoma	In busses throughout and in taxicabs.	Yes				Yes, occasionally.	Contemplate adoption of American Standard.	The Commissioner hopes to follow the recommendations of the American Standard.
Oregon	In school busses.	State has no other requirements.						
Pennsylvania	Yes, throughout in passenger cars, trucks, (cab), and busses.	Yes			No	Yes	Yes, Electrical Testing Lab., New York, N. Y	Heat-treated restricted other than windshield, must be ¼ inch thick. Wire glass restricted.
Rhode Island	Yes, throughout in passenger cars and trucks after Jan. 1, 1938. Throughout in busses since 1930.	Yes	Yes		Yes	No	Yes, Engineering Laboratory, New York.	Wire glass is prohibited.
South Carolina	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes		American Standard, Z26.1-1935. Nat'l Bur. of Stds.	The provisions of the American Standard are followed.
Tennessee	Busses are required to be equipped with safety glass.	State has no other requirements	Contemplate adoption of Interstate Commerce Com. regulations.					
Utah	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes	Yes	Yes, recognized testing laboratory.	The provisions of the American Standard are followed.
Vermont	Yes, throughout in passenger cars, trucks, and busses after Jan. 1, 1936.	Yes, in conformity with Vermont law no 116.	Yes		Yes	No	Yes, accept results of tests made by New York State and Massachusetts.	
Virginia	Yes, throughout in passenger cars, trucks, and busses after Jan. 1, 1936. Throughout school busses since 1932	Yes	Yes, and we accept photostatic copies of lab. reports made in line with American Standard, in lieu of any other test for this or any other state.		No, we require filing here of a photostatic copy of any laboratory reports indicating compliance with the American Standard.	Yes, but only when no test of any kind has been made or other information to indicate that such glass complies with the American Standard.	Yes, any testing lab. having arrangement with Nat'l Bur. of Stds. whereby appeal may be made to the Bureau in the event of a discrepancy.	The American Standard is followed.
Washington	Yes, throughout passenger cars, trucks (cab), and busses after Jan 1, 1938	Yes	Yes		Label required, but additional laboratory test is required.	Yes, sample required, size one square foot	Yes, National Bureau of Standards, and Electrical Testing Laboratory, New York	The Am. Std. is followed, except that some heat-treated glass by specific authorization is Washington, Class B, and not authorized for use in windshields.
West Virginia	Yes, throughout in passenger cars, trucks and busses.	Yes	Yes		Yes	Yes	Yes, National Bureau of Standards only.	
Wisconsin	Yes, throughout in passenger cars, trucks, and busses after Jan. 1, 1936.	Yes	No	Wisconsin has special state specifications.		Yes, sample must be submitted, size one square foot, with report of tests.	In accordance with Wisconsin state specifications.	

NOTE There is no state law covering safety glass for motor vehicles—January, 1938—in the following states: Alabama, Arizona, Florida, Georgia, Idaho, Kentucky, Mississippi, Montana, Nevada, New Mexico, North Dakota, South Dakota, Texas and Wyoming.

[1]Section 113 Minnesota Highway Traffic Regulation Act, Aug. 1937.

STATE REQUIREMENTS FOR SAFETY GLASS

Name of State	*Is safety glass required for use in automobiles?*	*Is the safety glass required to comply with any standard or pass any test?*	*Has the American Standard — "Safety Code for Safety Glass for Glazing Motor Vehicles . ." been adopted?*	*Have specifications other than the American Standard been adopted?*	*Is the American Standard label requirement sufficient without additional laboratory tests?*	*Is the manufacturer required to submit samples for tests?*	*Does the State accept the approval of testing laboratories or agencies other than its own?*	*Are any types of safety glass prohibited for: (a) Passenger cars (b) Trucks (c) Busses*
Arkansas	Yes, passenger cars, trucks, and busses after Jan. 1, 1938.	Yes	Yes			Yes	"Yes, Elec. Testing Lab., Underwriters' Lab., Nat'l Bur. of Stds. or any other eng. lab. of equal repute and shall include re-examination service."	
California	Yes, passenger cars, trucks and busses, since Jan. 1, 1936. School busses since 1932.	Yes	Yes		Require label and also examine laboratory reports.	No	Yes, Elec. Testing Lab., Nat'l Bur. of Standards and any other recognized agency.	Will approve heat - treated and wire glass for use in other than compartments occupied by persons.
Colorado	Yes, windshields in passenger cars and trucks. Throughout in busses.	Yes	Yes		No, manufacturer must submit copies of laboratory tests and samples.	Must submit samples for files.	Yes, Elec. Testing Lab., Nat'l Bur. of Stds.; others of high standing.	Will follow the provisions of the American Standard as to use of various types of glass.
Connecticut	Yes, throughout in passenger cars, trucks and busses.	Yes	Yes		Probably—not definitely decided.	No	Yes, Elec. Testing Lab. or any other equipped to make these tests.	Will follow the provisions of the American Standard as to use of various types of glass.
Delaware	Yes, throughout in passenger cars, trucks and busses, since July 1, 1935.	Yes	Yes		Yes, subject to check tests to be made at the discretion of the Commissioner.	Yes	Yes, Nat'l Bur. of Stds.; any commercial lab. engaged by the Commissioner.	Will follow the provisions of the American Standard as to use of various types of glass.
District of Columbia	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes	No	Will accept only the approval of the American Standards Association.	Will follow the provisions of the American Standard as to use of various types of glass.
Illinois	Yes, throughout in passenger cars, trucks and busses.	Yes		Yes (no details given).		Yes	No	None
Indiana	Yes, passenger cars, trucks, and busses, after Jan. 1, 1936.	No information given.						
Iowa	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes	No		
Kansas	Yes, in windshields in passenger cars and trucks, after Jan. 1, 1938. Throughout in busses.	Yes	Am. Std. not formally adopted but approvals issued only after test reports showing glass meets requirements of Nat'l Bur. of Stds.		No, copy of approval from Nat'l Bur. of Stds. or commercial testing lab. report together with marked samples are necessary.	Yes, samples are required for checking purposes.	Yes, Elec. Testing Lab., N. Y. City.	Heat-treated glass is prohibited in windshields.
Louisiana	Yes, passenger cars, trucks, and busses, after Jan. 1, 1937.	Yes	Law states that tests shall be in accordance with "recognized specifications".			No, Commissioner of Highways must keep approved list conforming to "recognized specifications and tests."		
Maine	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		Yes, American Standard label.	No	Yes, Nat'l Bur. of Standards.	Heat-treated and wire glass are prohibited for use in windshields, rear windows, and window beside the driver.
Maryland	Yes, throughout in passenger cars, trucks, and busses.	Yes	No	There are State "Specifications covering the approval of safety glass for State of Maryland".		No, mfr. is required to submit complete laboratory report to the Commissioner. A certificate will then be issued.	Yes, Elec. Testing Lab., N. Y. City.	Heat-treated and wire glass are prohibited in all types of motor vehicles operated on Maryland highways.
Massachusetts	Yes, throughout in passenger cars, trucks, and busses.	Yes	Yes		No	Yes, manufacturer must submit samples.	Yes, Elec. Testing Lab., New York, N. Y., and National Bur. of Standards.	Will follow the provisions of the Am. Std. as to use of various types of glass. Nothing but laminated plate glass permitted in windshields.
Michigan	Yes, throughout in passenger cars, trucks, and busses after July 1, 1934. Throughout in cars for hire regardless of date.	No, must provide against shattering.	No			Law requires that glass must be of sufficient consistency to provide against shattering on all cars manufactured after July 1, 1934.		
Minnesota	Yes, throughout in passenger cars, trucks, and busses.	Law states: "safety glass" shall be so fabricated as to substantially prevent shattering.[1]	(no reply)					Only laminated type of glass will be approved by the Commissioner for use in windshields; heat - treated glass for use in other parts of the vehicle.
Missouri	Yes, throughout in passenger cars, trucks, and busses.	Yes	No	Missouri specifica-		Yes	No	

National Standards for Farm Products[1]

Government standards and grades for agricultural products have had a long history in wholesale markets. Consumers now ask extension to retail markets

by

C. W. Kitchen

Assistant Chief, Bureau of Agricultural Economics

THE use of quality standards for identifying and describing farm products, in connection with their purchase and sale, is not new. That subject is almost as old as commercial agriculture. According to the best historical records, cotton grading began in Liverpool about 1800. But the record of standardization in our own country goes back much further than that.

In midsummer, 1619, the Virginia House of Burgesses passed the first tobacco inspection law. In 1640, Maryland enacted legislation providing for tobacco "viewers." Since then, many similar laws have been passed, and the production and marketing of tobacco has undergone many changes.

As the tobacco industry in this country grew, particularly since the Civil War, the problem of grading was left more and more to the buyers. Grading tobacco is a complicated task. It requires experience and skill. Most growers are not qualified for the work. Therefore, in 1930, the Bureau of Agricultural Economics was authorized to grade tobacco in a limited way for growers and warehousemen who wanted their tobacco graded and who were willing to pay a fee to have it done. Five years later, Congress passed a law under which referendums are held, and if two-thirds of the growers voting for any market favor grading, then the grading of all tobacco sold at auction on that market becomes mandatory. That law is now in operation on 27 markets, and probably 200 million pounds, or about 14 per cent of the crop, will be graded under it this year.

Selling the Nation's Cotton Crop

Although cotton grading is recorded as early as 1800, the practice of grading was almost entirely limited to persons engaged in the cotton trade. Uniform grade names were used in the American markets, but the qualities represented by these grades were not uniform. They varied by localities and from year to year depending upon custom and the average quality of the crop. This resulted in confusion and alleged abuses and manipulation in connection with the purchase and sale of future contracts on cotton exchanges.

To improve this condition, Congress passed the Cotton Futures Act in 1914. That law authorized the Secretary of Agriculture to establish standards for American cotton, required their use in trading in futures contracts, and provided that all cotton tendered in settlement of such contracts traded in on the exchanges should be graded by representatives of the Department of Agriculture. The grade certificates issued by employees of the Bureau of Agricultural Economics are final in the settlement of such contracts.

But the 1914 law did not require the use of national uniform standards in private transactions or spot sales, as they are known in the cotton trade. Therefore, in 1923, Congress passed the Cotton Standards Act. This Act requires the use of the official standards established by the Secretary of Agriculture in all sales by grade of American cotton in interstate and foreign commerce. Sales by sample are not prohibited, but if the cotton is sold by grade, the use of any standards other than those established by the Secretary of Agriculture is unlawful.

To a greater extent than any other farm com-

[1]Abstract of address before the National Live Stock Association, January 14, 1938.

modity we produce, cotton is an international crop. European exchanges had established standards of their own for buying American cotton. And their standards varied from the official standards established for use in this country. To avoid the confusion resulting from that situation, the Department entered into agreements with nine of the principal European cotton exchanges under which the official standards of this country were adopted. So now, all American cotton, when sold by grade in this country and for export, is described according to one uniform set of standards.

Grain Standards Act of 1916

Grades of various kinds have been used in selling grain for more than 80 years. But we have had national standards only for the past 21 years.

Until Congress passed the Grain Standards Act in 1916, there were almost as many sets of grain standards as there were grain producing areas and terminal markets. Standards representing regional or local market practices and opinions had been established by States, boards of trade, and grain exchanges. Much of the equipment for inspecting grain was crude and inaccurate. Standards were often applied under a policy of giving preference to local interests, and much was left to the judgment of individual inspectors. Grain commerce then, as now, was largely interstate in character. Consequently, in the movements of grain from the farms and country elevators to the terminals for storage or to the mills or to export, there existed a constant commercial hazard in selling by grade because of the possibility of one or more changes of grade between markets. This hazard imposed a toll that was injurious alike to farmers, elevator operators, processors, and exporters.

In an effort to correct these conditions Congress passed the Grain Standards Act in 1916. That law gives the Secretary of Agriculture authority to establish standards for grain and makes unlawful the use of any other standards in buying or selling grain by grade in interstate commerce in this country or for export to other countries. The law does not prohibit buying and selling grain by sample. The result of that law has been that we now have uniform national standards for grain. Moreover, all grain shipped from or to a place where an official grain inspector is located must be inspected. Nearly 400 inspectors located at 176 inspection points are engaged in this work. Appeal grade certificates issued by the Department of Agriculture are final.

Optional Grades for Fruits and Vegetables

Grades for tobacco, cotton, and grain, which I have just mentioned, are provided by specific Federal laws containing more or less mandatory features. But the development and use of national standards for many other farm products without mandatory legislation, so far as the Federal Government is concerned, has expanded rapidly in recent years.

The Bureau of Agricultural Economics has developed grades for 71 of the fruits and vegetables. So far as the Bureau is concerned, the use of these grades is optional with buyers and sellers of these commodities. Several States, however, have adopted the Federal grades and have passed laws requiring shipments of fruits and vegetables to be inspected and marked according to them. Many of these products are highly perishable, and some uniform language or grade is essential to a reasonably reliable description of them in connection with long-distance transactions.

Consequently, the use of the national grades has grown rapidly, particularly in recent years since distributors of fruits and vegetables have been operating under Federal licenses to protect the industry from certain forms of unfair competition. For example, when a Chicago potato buyer contracts to buy a carload of U. S. No. 1 potatoes to be shipped from Idaho, he may not repudiate his contract to avoid a loss merely because the market may have declined between the time of purchase and the date of delivery. If he so repudiates his contract without proof that the potatoes were not of the grade he contracted to buy, he places his right to continue business in jeopardy. Obviously, in such circumstances, the official inspection certificates play an important part in settling such disputes. During the past fiscal year more than 420,000 carloads of fruits and vegetables were officially inspected.

Butter, Eggs, Hay, Wool

National standards for permissive use have been developed for many other farm products such as butter, eggs, cheese, dressed poultry, hay, beans, wool, livestock, meats, canned fruits and vegetables, rice, and several others. This season, for the first time, we have undertaken a grading service for cottonseed on a limited scale. And we should not overlook mentioning that comparatively new commercial farm product, soybeans, which has so many industrial uses. Practically all soybeans bought by crushers are bought on the basis of grades established by the Department.

Although opinions vary among different producer and distributor groups as to the relative advantages and practicability of uniform national quality standards, the value of such standards, uniformly applied, as an aid in marketing seems to be more and more widely accepted.

Not Fixed Like a Footrule

The development and use of quality standards is a process of evolution. They must keep pace with changes in production, changes in consumer preferences, and with changes in marketing methods. Quality standards for farm products are not like the standard footrule. They cannot be fixed arbitrarily as of a given date and left forever unchanged if they are to be of practical value. Some of the standards used 20 years ago now seem crude when compared with those in use today. Many of those used today probably will be considered crude and unsuited to marketing conditions 20 or 25 years hence. It is only by continuing scientific research that progress can be made in the field of standardization. That is a job not alone for the Federal Government but for the agricultural colleges and for industry as well.

One of the advantages of the national standards is stability. They are not shifted from season to season depending upon the quality of the crop or the available supplies. They are uniform, within reasonable limits, throughout the country. Being national in scope, the standards do not vary from region to region. They cover characteristics common to products produced in all major regions of production. And, therefore they do not reflect characteristics peculiar to products produced in limited areas, except where such differences in quality are so marked as to differentiate them as separate classes. As an example of this exception, it is not practicable to have one set of grades for all wheat produced in the United States. The differences between hard and soft winter wheats and between them and spring wheat require separate and differing specifications.

Eliminating Human Judgment

One of the most important problems before standardization specialists everywhere, whether they are working for the Government or for other agencies, is to limit or remove, so far as possible, the element of human judgment in the inspection process. Though this problem is not wholly unsolved, many years of research lie ahead. Too much of the grading process for many products still depends upon the senses—taste, smell, touch, and sight. So long as this is true, complete uniformity cannot be expected in the judgments of numerous graders, whether they are employed by the Government or by industry.

Technical experts are continuously at work on this problem, and considerable progress has been made. In the earlier days of grain grading, for example, moisture content, which is a measure of keeping quality, was largely determined by touch. By the feel of the hand, inspectors would judge whether a sample of wheat was dry, tough, or damp, and they would grade it accordingly. When Federal standards for grain were put into effect, a device was developed which determined the moisture content by a process of distilling the water from the sample. Although a great improvement, this method took time and did not produce uniform results under all conditions. By continuous research and experimentation, a new device has been developed which operates on the principle of measuring the resistance to an electric current as it passes through a body of grain. This method has been made official and is now widely used in grain inspection work. It requires only about 30 seconds to determine the moisture content of a sample of grain compared with about 40 minutes under the old method. A quick method of determining the oil content of flaxseed also has been developed.

Other mechanical and chemical devices have been and are in process of perfection to remove or limit the uncertainties of grading. We now have a machine for quickly and accurately measuring color which is a grade factor of great importance for some products such as hay, cotton, and some of the canned fruits and vegetables.

Consumer Awakening

In the beginning, the standardization and inspection work of the Bureau was developed primarily to aid the movement of commodities through wholesale channels. That still represents the major part of our work. But when we began grading such products as butter, eggs, dressed poultry, canned fruits and vegetables, and meats, retailer and consumer groups began showing a keen interest in uniform grades for such products. The quality of such products cannot be judged by their appearance in the store.

Consumers are asking why it is not practicable to use grades in wholesale transactions but it is not practical to give the consumer information regarding quality expressed in terms of grade. That is a question for distributors to answer. Many of them are answering by showing grade information on retail packages. Last year, the Bureau graded some 262 million pounds of butter according to Federal grades. That represents about 1 pound out of every 6 pounds of creamery butter produced in this country. More than 75 million pounds of this graded butter were sold in consumer packages, each carrying a "certificate of quality" showing that the butter was officially graded and whether the score was 92 or 93 at the time of grading. Two western States recently passed laws requiring that one of three grades be marked on retail packages of butter. Considerable quantities of eggs and dressed poultry are now being marked

by grade for the information of consumers. Several States have mandatory egg marking laws.

The Bureau has developed three grades for each of 26 canned fruits and vegetables. The terms A, B, and C are used. The use of these terms on individual labels is growing rapidly. Accurate figures as to the quantities so marked are not available. But one of the large eastern retail distributing organizations is reported to be using nearly 200 million grade labels this year, about 70 percent of which are grade C. This seems to repudiate the notion that when the grade is shown on the retail package, consumers will buy only the high grades. The experience of distributors of canned foods thus far indicates that people will readily buy a second or third grade article if it is wholesome. But consumers do not want to pay a first-grade price for a third-grade product, as is too often the case when no grade information is available to them.

Growing Interest in Graded Meats

Most of you know what happened with meat grading. Starting in June, 1927, the Bureau offered to grade and stamp beef in a limited way and largely as an experiment. No fees were charged for the service. This was continued for 13 months during which time we graded between 40 and 50 million pounds. We then began making a charge for the service. The service has grown since to where we are now grading annually approximately 550 million pounds of meats and meat products. About 450 million pounds, mostly of fresh beef, carry the grade stamp.

Quality Guide Needed

It is not my purpose to discuss the various arguments directed against meat grading. You no doubt hear that the grade mark will destroy the private trademark. So far as it is practicable, let the private brand continue to be used for whatever value it may have in promoting sales of the products of individual processors. But uniform grade marking will give the housewife a more dependable guide to quality than is possible when she must depend entirely upon an intricate system of numerous private brands. Consumers should have the benefit of a uniform measure of quality, whether the product was prepared by a small processor or by a large national advertiser. This argument about destroying private brands loses weight when it is recalled that very little fresh meat was merchandized by private brands until Government grading and stamping had made considerable headway.

Some argue that Government grading would not guarantee the nutritive value of meats. Neither can private grading nor private brands do that. That question, it seems to me, has nothing to do with grading under present-day knowledge and methods. Some day it may be possible to tell quickly and cheaply the comparative nutritive value of two carcasses of beef, also the vitamin and mineral content of different lots of fruits and vegetables. We cannot do it now. But that is no reason why other known measures of quality should not be clearly expressed in terms of grade. Anything new may be confusing until it is understood. But the world goes forward by innovations, and people must accustom themselves to change. It is as necessary to accept the certainty of change in our marketing methods as it is wise to keep to the right in traffic. The use of uniform quality standards under a system of grading which commands public confidence is one of the changes which I think eventually will be accepted.

Standards Pave Way For Progress

"Standards are the foundations on which we stand, working for progress; but we make this progress only when we are sure that the new ideas and inventions bring common advantages, never forgetting that 'Better is the enemy of good.' Therefore it is clear that standards are not sterile creations as is sometimes said of them. They pave the way for progress, giving the best that is known at the moment to the whole of mankind without any restraint; preventing continuous change but at the same time promoting steady evolution.

"Another important mark of a standard is that it is not the work of a single person but the result of enlightened cooperation. A number of people become dissatisfied with the lack of uniformity in some product or process; they wish to avoid uncertainty and demand a compromise between conflicting interests and the elimination of struggles which expend energy which could be better employed for other purposes. Therefore standards are an embodiment of the great idea of cooperation which is the foundation of modern society. Without standards our state, our commerce, and our traffic would be inconceivable."—*Metal Industry, London.*

Thirty Years' Standardization Helps Valve, Fittings Industry[1]

by

John J. Harman[2]

General Secretary, Manufacturers Standardization Society of the Valve and Fittings Industry

IN the valve and fittings industry the growth and development of the standardization movement has been particularly notable since the beginning of the present century. Naturally, in connection with the rise and expansion of a fundamental development such as this, it is to be expected that there should be some differences of opinion and arguments, pro and con, on various phases of the problem. The valve and fittings industry has been no exception to this general rule, and experience has shown that in order to avoid serious complications the development of standards must be done intelligently by persons thoroughly familiar with all aspects of the situation.

Wholesale standardization involving unnecessary restrictions might very easily be carried so far as to smother the divine spark of creative genius in designers and thus put an end to progress and development. Then, too, as the primary function of standardization is economy, standards should always conform as closely as possible to existing commercial practice in the industry. The total investment in patterns, tools, and equipment for manufacturing existing designs of products is enormous, and consideration should always be given to the economic loss that would be occasioned by unjustified mandatory unification of all detailed dimensions of a given product. Standardization proposals often involve a potential economic loss out of all proportion to the possible benefits.

In spite of differing opinions, however, numerous standards have been set up in the valve and fittings industry of great value to all concerned. The progress along these lines unquestionably has been due in large measure to the continuous existence during the past thirty years of a representative organization in the valve and fittings industry devoted exclusively to the study of standardization problems.

Organized in 1908

Leaders in the valve and fittings industry realized the need of cooperative action in standardization matters at an early date, and in 1908 set up an organization known as the "Committee of Manufacturers on the Standardization of Pipe Fittings and Valves." The purpose behind this organization has been both constructive and defensive. The trained engineers of the valve and fittings industry, who are familiar with and take into consideration all the manufacturing and economic phases of the situation, are a powerful factor in guiding standardization proposals along practical lines.

The early efforts of this committee were a very important factor in the standardization of the connecting ends of valves and fittings to insure interchangeability. It was largely through the efforts of this organization, in cooperation with standardizing bodies such as the American Society of Mechanical Engineers and others, that practical standards were developed and put into use for pipe

[1]Reprinted from Heating, Piping, and Air Conditioning, March, 1938.

[2]Secretary, ASA Sectional Committee on Standardization of Pipe Flanges and Fittings (B16).

threads and flanged joints for cast iron and bronze products. It is of interest to note that although the Brigg's standard for pipe threads was projected in 1886 it was not until 1915, in consequence of some years of careful study and work by this committee, that thorough interchangeability in the joints of pipe threaded products became a broadly accomplished fact.

In 1924 the old "Committee of Manufacturers on the Standardization of Pipe Fittings and Valves" was reorganized under the name of "Manufacturers Standardization Society of the Valve and Fittings Industry" (abbreviated "M.S.S."). At that time in order to provide a definite official procedure for handling the details of the society's work, a new constitution together with a code of procedure and declarations of policy were developed. The organization as now set up is designed to provide representation of the valve and fittings industry on outside standardizing bodies in order to make sure that engineering and manufacturing problems are given due consideration in the development of standardization projects affecting the industry.

Carrying out this policy the society has become one of the active member bodies of the American Standards Association. The society also is a member of the American Society for Testing Materials and has established contacts involving workable cooperation with a number of other standardizing bodies where official representation is not feasible.

Active Standards Now in Effect

During the period from 1924 to date, the M.S.S. has developed and promulgated a number of M.S.S. "standard practices." A list of the stand-

Standardization has become an important factor in many industries where modern mass production methods have accomplished so much in lowering the cost of desirable products to levels within the reach of large masses of the consuming public.

It has enabled manufacturers to reduce waste and save money in many ways. Reduction of unnecessary variety in manufactured product, accomplished by standardization, naturally results in a larger demand for the remaining types and sizes on which production is concentrated. The longer runs and fewer set-ups increase plant efficiency; fewer machines, jigs, fixtures, and tools are needed; substantial savings are made in the purchase of raw materials; the cost of catalogs and sales literature is reduced; goods are packaged with less expense; and storage and warehouse costs are decreased with fewer items to handle and less money tied up in slow-moving inventories. Distributors also benefit by smaller stocks and more rapid turnover; and consumers, due to the lower prices, have more money available to satisfy additional wants, thus adding to the total business volume.

Application Local at First

When standards originally began to come into use, it was natural that they should be developed first by individual companies, such standards, of course, applying only to their own products and being retained as jealously guarded secrets within their own organizations. However, as production, transportation, and distribution facilities improved and commerce became more extensive and complex, efficient production and marketing required that many of these individual company standards should be unified, and this demand led to standardization by industrial trade associations, such as the Manufacturers Standardization Society of the Valve and Fittings Industry, and by technical societies, such as the American Society of Mechanical Engineers. Later, to afford representation to consumers, distributors and general interests as well as producers, thus assuring wide acceptance and use of the standards, national standardizing bodies came into existence. This latter class of standardizing bodies is represented in the United States by the American Standards Association. As time goes on, standardization on an international scale, which has already progressed to some extent, may be expected to take on added importance.— ***John J. Harmon.***

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SP-20-1936	M.S.S. Specifications for Steam Bronze Castings for Valves, Flanges and Pipe Fittings
SP-21-1930	A.S.T.M. Specifications (A126-30) for Gray Iron Castings for Valves, Flanges and Pipe Fittings
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SP-34T-1932	M.S.S. Service Ratings and Test Standard —Valves and Fittings
SP-35-1936	Railing Fittings—Male and Female Threads

ard practices now in effect is shown in Table 1.

From Table 1 it will be noted that seven of the standard practices shown bear a 1937 date of issue, indicating that growth in the standardization movement is very active at the present time. M.S.S. standard practices, after suitable trial in practical use for a period of time, are often developed into American Standards by the American Standards Association which, of course, affords them much wider distribution and more general recognition.

American Standards Developed

It is of interest in this connection to list the American Standards now in effect, that have been developed and promulgated by ASA Sectional Committee B16 on Standardization of Pipe Flanges and Fittings (see Table 2). Sectional Committee B16 operates under the joint sponsorship of the Heating, Piping and Air Conditioning Contractors National Association, the American Society of Mechanical Engineers, and the Manufacturers Standardization Society of the Valve and Fittings Industry.

At first thought it would seem that when the major products of an industry have been standardized the work would be completed and standardizing bodies such as the M.S.S. could be disbanded, but not in this case. In the valve and fittings industry much standardization work still remains to be done and in fact the work can never be completed, due to constantly changing conditions. Standards, of course, stabilize products to a certain degree but experience has shown that demands for changes are constantly coming up and have to be considered. New materials, new service conditions, new designs, new requirements of regulatory bodies, and many other factors keep the situation in a constant state of flux, and the society must always keep in close contact with the new developments. In connection with the defensive work of the society it must be also remembered that for some unaccountable reason, valves and fittings appear to be very popular as grist for the mills of miscellaneous specification writers, much to the embarrassment of the industry. The special requirements contained in such specifications, representing the ideas of these different individuals, do not permit manufacturers to follow standard production procedure and compel the introduction of job shop methods, with their attendant increase in manufacturing costs.

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B16c-1927	Malleable Iron Screwed Fittings for Maximum W.S.P. of 150 Lb
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B16e1-1935	Addendum to American Standard Steel Flanged Fittings and Companion Flanges
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The year was one of the most active the Society has ever experienced, it reports. In addition to the new standards and tentative standards, a number of new projects were started, and three new committees—on paper and paper products, on plastics, and on glass and glass products—were formally organized.

Fifteen new research projects have been started, two concerned with the properties of cast iron and tin- and lead-base die casting alloys; the other 13 with test methods. Of these, four are on non-ferrous metals and alloys; two concern petroleum products; and there is a new project in each of the following fields: structural clay tile, fire tests, bituminous materials, coal and coke, liquid rubber products, bast fibers, and soils.

A complete report of standardization activities during 1937 and a survey of prospective work during 1938 is published in the January issue of the *A.S.T.M. Bulletin*. Copies can be obtained from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, at 25 cents each.

Committee Studies Wool Labels For Federal Trade Commission

Members from each of the groups interested (manufacturers, growers, distributors, retailers, and consumers) are being appointed to act as a committee to consider proposed fair trade practice rules for identification of fiber content of wool fabrics. The rules as proposed would have special reference to virgin wool and reclaimed wool.

Appointment of the committee was authorized at a conference called by the Federal Trade Commission March 8. It is understood that the committee will start work at once and report to the Commission March 22 for consideration at a second hearing scheduled for March 29.

At the March 8 conference Wool and Part-Wool Fabrics, Commercial Standard CS 65-38, was placed in the record at the request of the chairman.

The Commercial Standard for Wool and Part-Wool Fabrics, which does not include blankets and knit underwear, provides that when the terms "wool," "woolen," or "worsted," are used alone they shall refer only to fabrics of which the wool fiber content is not less than 95 per cent by weight of the total fiber content. When the wool fiber content is less than 95 per cent, the minimum percentage of wool shall be indicated in figures preceding the words "wool," "woolen," or "worsted." This standard also specifies methods of test for determining fiber content.

The Advisory Committee on Ultimate Consumer Goods of the American Standards Association has been studying the Commercial Standards for Wool and Part-Wool Blankets, CS 39-37, and also a recommended Commercial Standard on Shrinkage of Woven Woolen and Worsted Fabrics. The committee has recommended that arrangements be made for submitting these two Commercial Standards to the American Standards Association for approval. It is expected that the Advisory Committee will also take up consideration of the Commercial Standard for Wool and Part-Wool Fabrics, CS 65-38, soon.

New York Safety Council To Meet April 19-21

The Ninth Annual Convention of the Greater New York Safety Council will be held April 19-20-21 at the Astor Hotel, New York. A session on Elevators, headed by Sullivan Jones, chairman of the Sectional Committee on Elevators, Dumbwaiters, and Escalators, will be held Tuesday afternoon, April 19. Other important sessions include discussions of slips and falls, handling material, industrial lighting, inspection, occupational disease, and facts about accidents. A question and answer session for exchange of safety information is scheduled for 2:15 Wednesday afternoon, April 20.

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British Engineer Finds Non-Standard Camera Parts Make Trouble for Users

H. A. Robinson says camera industry faces chaotic situation unless spare parts are standardized. His article, below, is reprinted from the *British Journal of Photography*, September 24, 1937

THERE is little doubt that we are rapidly approaching a time when some attempt will have to be made to introduce standardization into the manufacture of camera parts. This need for standardization was pointed out in a recent leading article in this Journal.

At present no such uniformity exists, for practically every item that can possibly be made to a varying gauge or dimension is so treated by the different makers. No two screw-threads ever seem to agree, while the variety of fittings that can be introduced into a simple component like a dark slide is really quite remarkable.

All this is apparently considered by some manufacturers as "good business." At one time it probably was, and it may even assume that aspect now, but whether it will be so in the near future is very questionable.

A comparatively few years ago photography was carried out by a relatively small band of workers who, once obtaining a camera, adhered faithfully to it, and treated the makers almost as personal friends to whom they did not mind turning for advice (and spare parts) as the occasion arose.

Avalanches of Cameras

Conditions, however, have now changed. Photography has become the work and serious hobby of not merely the hundreds, but the hundreds of thousands. To cater for this increase in interest cameras in overwhelming avalanches have been poured on the market. Batches of instruments have been manufactured (often by obscure or foreign firms) which, becoming quickly obsolete, have found their way into the second-hand market to be resold to the ever-eager bargain hunter; their places being taken by newer consignments with fresh gauges and standards—and so *ad infinitum*.

All this is steadily creating a chaotic situation, a situation which in its confusion and mind-worrying effects will eventually be anything but "good business" for the photographic trade.

A similar state of affairs arose some time ago in the cycling world. Makers turned out machines of a vast variety of wheel sizes, thread gauges, etc. No part from one machine would ever fit another, and for even the smallest item the makers had to be approached or special agents sought out.

To make matters worse some manufacturers from time to time would scrap all their previous standards and produce an entirely new bicycle with everything, from the tires to the smallest nut, of a different gauge; and, what was more, they ceased to make parts for their older designs.

And for a long time they thought it beneficial for trade because they reasoned, if a man cannot get a pedal to fit his machine, when that pedal comes off he will get a new machine. But would he? At last "the trade" woke up to this fundamental question.

It is not our purpose to discuss here how they found it out, but at last they did realize that when a part cannot be easily replaced a man does not always rush to buy a new article, he may even go to the other extreme and drop the pursuit altogether. Therefore, by tacit arrangement, the makers commenced to produce standard parts, so that a hub nut would fit any machine, a lamp would sit nicely on any bracket, and a broken chain could be repaired in just as much time as it took to reach the nearest cycle shop.

And the result? Cycling from being the hobby

of a minority became the interest of literally millions, as it is to-day.

Cameras cannot, of course, be completely compared with cycles, as there is of necessity a far greater range in the former than the latter, but the situations arising out of non-standardization in the two are very similar.

Cycling would not have come to its present national-wide popularity if it had not been for the adopted policy of uniformity, and photography will suffer eventually if this policy is not quickly accepted.

Thicker Fog to Come

Already dealers are finding themselves on the outer edge of a thicker fog to come. Frequently they cannot identify makers and have no idea where spare parts can be obtained.

As an example. We applied to a London firm for extra dark slides for a certain camera which they themselves had marketed, giving the trade name and other details. They replied that so many slightly varying instruments had been turned out under this name that they could not recognize the type without seeing the camera. This they did, and reported that there were no slides available, as the stock had come from a certain Mediterranean country (although the trade name did not suggest this), that further supplies could not be obtained, and their only suggestion was to alter the back. Yet this camera was put on the market only a few years ago.

We could quote many other instances that we have heard of, and experienced ourselves, and readers could probably add to such a list, for who has not at some time or other lost a rather important screw only to find that it was quite impossible to match the thread.

Yet all this sort of thing could be stopped with standardization. Slides would be one of, say, two or three fittings at the most, while all screws would be of this or that thread (perhaps again a choice of two or three), and would be obtainable at all dealers.

Who Will Benefit?

Who really will benefit eventually by the state of incipient chaos in which photographers are finding that "nothing will fit anything" as it were?

The repairers? Well, yes, probably they will to a certain extent, but certainly not the manufacturers or dealers, and certainly not the public. The dealers, we feel sure, as we say, are already finding themselves on the edge of a deepening haze, and the manufacturers who delude themselves into thinking that the situation is "good" will suddenly awaken to find, as the cycle authorities did, that this is not the case.

With regard to picture sizes among amateurs, it is interesting to note that the public have already forced to the fore, by their own choice, a certain standard. We refer to the popular $3\frac{1}{4}$-in. x $2\frac{1}{4}$-in. size, which has now undoubtedly come to the front as the accepted amateur format. Here, of course, the populace was able to make its voice heard, or rather its purchases felt, for it is comparatively simple for the public to show a choice this way, and for the camera and material manufacturers to adjust their products to the demand.

With regard to the component parts of cameras, however, the power of the general amateur public to show preference is very small, for in the main they are untutored, and simply take what is presented at the time.

Photography, it must be remembered, is still comparatively young, indeed very young when regarded as a popular institution. But there is rapidly growing a class of workers far more tutored in the mechanics of the craft that their forebears: a class who are wanting to know the whys and wherefores of an instrument before laying out money.

"Can I Replace It?"

The time is not far distant, we feel sure, when photographic purchasers will start to ask, "If I lose this catch, one of these screws, or this pinion, can I easily replace it?" "Is it standard?" And if the reply is evasive then the camera will remain unsold.

The tendency towards standardization in film size is, we think, a big step forward (being of greater signification than might at first appear), and it reflects great credit on the discernment of the general public; but demands for standardization of camera parts will have to come from more experienced photographers.

There are, of course, many items even in greatly differing cameras that could be brought to recognized gauges without interfering with the characteristics of the individual make, but the items crying out for immediate attention are, undoubtedly, screw-threads, back fittings, and threads on lens flanges, etc. Two or three sizes in each are all that is really required.

The question of standardizing fittings will have to be faced, and that quickly, if a state of confusion akin to that which Australia is now experiencing with its railway gauges, is not to come about; a state which is bound eventually to have an adverse influence on the whole practice of photography.

Committee to Study Laundry Standards

Standard practices for laundries and dry cleaning establishments were among the new standardization recommendations considered by the ASA Advisory Committee on Ultimate Consumer Goods at recent meetings. A subcommittee to study standards of the American Institute of Laundries, the Institute for Maintaining Dry Cleaning Standards of the U. S. and Canada, and the Certified Rug Cleaners Institute has been authorized.

Consideration was also given at recent meetings of the Advisory Committee to bedding and upholstery, refrigerators, tuning pianos, and waterproof and water-repellent materials.

The Advisory Committee suggested that the scope of the propsed work on bedding and upholstery, recommended to the American Standards Association some time ago, might cover:

"Development of standards covering the identification and disclosing the percentage composition of the filling material; grades of such filling material; identification of the finished article to show whether it is in whole or in part made from new or second-hand material; methods of labeling to make this information available to distributors and consumers."

The Committee also recommended that the National Association of Bedding and Upholstery Law Enforcement Officials be named to take the administrative responsibility for the project.

The Advisory Committee is working to bring about new activity on standards and specifications for refrigerators. A subcommittee working on this problem is being enlarged to contact manufacturers and decide what action would be practicable. Recommendations for enlarging the subcommittee resulted from a subcommittee report which included proposed tentative specifications for household electric refrigerators. These suggested specifications will be submitted to the ASA committee on refrigerators (B38).

Recommendations to defer work on standards for tuning pianos and for the ability of pianos to hold their tune were accepted by the Advisory Committee. The recommendations were made by a subcommittee of the Sectional Committee on Acoustical Measurements and Terminology (Z24).

Many manufacturers are heartily in favor of undertaking work on standardization of waterproof and water-repellent materials and fabrics, reported a subcommittee studying the subject. A conference of manufacturers was held, the subcommittee said, at which all parties agreed that the standardization of test methods was highly desirable. Further study will be necessary before the subcommittee can make definite recommendations on this subject to the Advisory Committee.

British Standard Outlines Tests, Properties for Diesel Fuel Oils

Higher grades of fuel to meet the demands of the modern high-speed Diesel engine are included in a revision of the British Standard Specification for Fuel Oils for Diesel Engines, just published. The new standard is a revision of the standard originally approved in 1924, and includes a grade of oil suitable for engines for automotive and allied purposes with speeds in excess of 800 revolutions per minute, as well as other grades for medium and slow-running engines.

Tables showing properties of oil, and methods of test for the determination of the closed flash point, viscosity, hard asphalt, ash, water content, pour point, Conradson carbon, sulphur content, distillation, aniline point and gross calorific value are given.

Copies of the Standard, B.S.S. 209-1937, may be ordered through the ASA Library.

C. W. Spicer Named President by SAE

C. W. Spicer, vice-president and founder of the Spicer Manufacturing Company, was named president of the Society of Automotive Engineers at its annual meeting in January.

Mr. Spicer is a member of the Standards Council of the American Standards Association and of the Mechanical Standards Committee, general correlating committee in charge of mechanical projects. He has been chairman of the SAE Standards Committee for many years, and was chairman of the Standards Committee of the American Society of Mechanical Engineers for five years.

Mr. Spicer invented the universal joint, which has been a big factor in the development of the automobile. He has been a member of the Society of Automotive Engineers since 1910. The SAE is a Member-Body of the American Standards Association.

Federal Specifications Adopted For Government Purchasing

Copies of new and revised Federal Specifications, for use in all Government purchasing, just received by the American Standards Association Library, are listed below.

Bags; Hand, Leather KK-B-50
Buckets; Iron, Zinc Coated (Galvanized) RR-B-771
Cards; Guide, Pressboard (File Size) UU-C-96a
Cements, Hydraulic; General Specifications (Methods for Sampling, Inspection, and Testing) SS-C-158
Cement; Portland, Moderate-Heat-of-Hardening SS-C-206
Coats and Trousers; Dairy or Hospital, White BBB-C-586
Denim; Blue, Indigo (Fully-Shrunk) CCC-D-151a
Duck; Cotton, Enameled CCC-D-741
Hot-Plates; Electric W-H-636
Leather; Bag KK-L-151a
Levels and Plumbs GGG-L-211
Linen; Table (Doilies, Napkins, and Tablecloths) DDD-L-391a
Lining; Carpet DDD-L-416
Meat; Luncheon PP-L-791a
Mowers; Lawn, Hand OO-M-671
Packing; Hydraulic HH-P-112
Scrim; Curtain CCC-S-121
Swiss, Dotted; Cotton CCC-S-891
Tape; Cotton, Bleached, Dyed, or Grey, General-Use DDD-T-86
Undershirts; Men's, Cotton-Wool, Mixed JJ-U-517
Valves, Brass or Bronze; Angle and Globe, 150-Pound S.W.P. (For Land Use) WW-V-51

Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents for all except the specification for hydraulic cement, SS-C-158, which is 10 cents.

A.R.E.A. Committees Take Action On Standards Used By Railroads

Requirements for fine and for coarse aggregates are recommended for addition to the Specifications for Portland Cement Concrete of the American Railway Engineering Association as one of the actions proposed to the Association in recent committee reports. The proposed standard includes provisions for uniformity, resistance to abrasion, and methods of sampling and testing.

Specifications for foundations, also recommended, include provisions for design, allowable load on piles, types of piles, and loading tests. Specifications for placement of concrete by pumping were also proposed.

Several specifications of the American Society for Testing Materials were recommended for inclusion in the *A.R.E.A. Manual*. Among these are specifications for Reinforced Concrete Culvert Pipe. Requirements to assure that special pipe which does not meet the A.S.T.M. standards but which must be used for unusual conditions will safely carry the necessary loads are also proposed.

Requirements for large rivets, recommended for inclusion in the *A.R.E.A. Manual*, are identical with the American Standard for Large Rivets (B18.4-1937).

The *A.R.E.A. Bulletin*, November, 1937, includes reports on standards and specifications of Committees on Wood Bridges and Trestles, Masonry, Iron and Steel Structures, Impact, and on Economics of Bridges and Trestles.

Bureau of Standards Circulates Draft on Dress Sizes

A Tentative Draft of Proposed Commercial Standard on Size Measurements for Women's Dresses, looking toward definite specifications for sizes in women's, misses', and juniors' dresses was prepared by the National Bureau of Standards and circulated early last November by the National Retail Dry Goods Association for comment and suggestions. One of the objects of this standard, when finally adopted, is to facilitate the checking of ready-to-wear dresses "as delivered to the retailer or consumer, especially in those cases where the size measurements are questioned or return of garments is under consideration."

In attempting to establish certain standard measurements, there is no intention, the National Bureau of Standards announces, "to discourage or restrict the production of dresses whose measurements vary from those of the standard, to meet some particular need or demand of the industry."

A.T.A. Appoints Safety Engineer

Beginning February 15, Merwyn A. Kraft will be in charge of the accident prevention program of the American Transit Association, the A. T. A. announces. Mr. Kraft was formerly with the Bureau of Street Traffic Research, Harvard University. His appointment is the first step in carrying out the Association's plan of accident prevention in the industry approved at the 1937 convention.

Mr. Kraft will work under the general guidance of the Association's Accident Prevention Committee of which T. Fitzgerald, vice-president and general manager, Pittsburgh Railways Company, is chairman. The work is being financed from a special fund set up through contributions by 30 member companies of the A. T. A.

The American Transit Association is a Member-Body of the American Standards Association.

A.G.A. Broadens Approval Program To Include Kitchen Appliances

by

Franklin R. Wright

American Gas Association
Testing Laboratories

IN line with the usual policy of developing approval requirements for the testing and certification of gas appliances as the needs and demands of the industry warrant, steps were taken recently leading to the preparation of requirements for portable bake ovens, deep fat fryers, unit broilers, and various types of commercial kitchen counter appliances, such as hot plates, griddles, coffee urns, toasters, sterilizers, etc.

Two new subcommittees of the ASA Sectional Committee on Gas Appliances (Z21) A. G. A. Approval Requirements Committee, have been organized to develop approval requirements for bake ovens and counter appliances. The subcommittee on portable bake ovens consists of four gas company and four manufacturer representatives, while the counter appliance subcommittee, because of the diversity of equipment to be covered, has a total membership of twelve equally divided between gas company and appliance manufacturer representatives. As in the cases of other requirements subcommittees, manufacturer members on these two groups were nominated by the Association of Gas Appliance and Equipment Manufacturers.

Work on Bake Ovens

It is expected that initial meetings of these committees will be held some time this spring to start preparation of standards and to determine what, if any, research or investigations are needed to permit completion of them. It is hoped that it will be possible to complete requirements for bake ovens and for at least the principal counter appliances by the early part of next year.

The task of developing approval standards for deep fat fryers and unit broilers was assigned, by the Approval Requirements Committee, to the Subcommittee on Approval Requirements for Hotel and Restaurant Ranges. The title of this committee was consequently changed to "Subcommittee on Approval Reqiurements for Hotel and Restaurant Ranges, Deep Fat Fryers, and Unit Broilers", and the membership increased by adding one additional manufacturer and one more gas company representative. The next meeting of this group will probably be held this spring at which time plans will be laid for the preparation of approval standards for deep fat fryers and unit broilers. It is probable that the requirements for such equipment can likewise be completed by the early part of 1939.

To Distribute Copies

As soon as copies of tentative requirements for the various appliances referred to are completed by the subcommittees concerned, they will be published and distributed for criticism. Unless unforeseen contingencies arise, these requirements should be available late this year.

Any comments or suggestions regarding these proposed requirements from either gas company or appliance manufacturer interests will be welcomed by the subcommittee concerned, and careful thought and discussion given to them. In fact, when such requirements are distributed for criticism it is urged that member companies carefully review them and present for the committee's consideration any recommendations or suggestions they may have. While the subcomittees attempt and do a very thorough job and try to anticipate or foresee all contingencies, the experience of other companies and individuals not represented on the committees is always helpful in the development of sound national standards.

Gas Clothes Dryer Requirements To Be Expanded for A.G.A. Tests

The revision of the American Standard Approval Requirements for Clothes Dryers to cover appliances of the unvented or direct-fired types was one of the most significant actions taken by the subcommittee on clothes dryers of the committee on approval requirements for gas appliances[1] at its recent meeting.

In deciding to extend the requirements to direct-fired equipment, the committee recognized the desirability of making the tests for combustion and other characteristics more rigid for these appliances, because of the fact that they are not connected to a flue. Limits on completeness of combustion were, therefore, reduced to one-half the figure specified for vented dryers during the test under normal room conditions. In addition, combustion tests were added specifying tests on various types of gases in a 1,000 cubic foot air-tight room, both of these requirements being the same as those specified for gas space heaters such as radiant heaters, circulators, gas logs, etc.

The same limits as to screen temperatures, wall and floor temperatures, and similar safety features are specified under the revisions for both direct and indirect dryers. The use of thermostats or other temperature-limiting means as well as gas pressure regulators was made optional. When such accessories are supplied, however, construction and performance requirements have been included to cover them.

Include Propane, Butane Gases

Because of the increasing use of propane and butane gases for domestic purposes in rural and small communities beyond the reach of city-gas mains, the subcommittee decided that the approval standards should be expanded to cover dryers for use with such fuels. The construction and performance requirements for dryers for use with these gases are the same in most cases as those for natural, manufactured, and mixed gases, with the addition of certain stipulations on tests necessitated by the characteristics of liquefied petroleum gases.

[1]The Sectional Committee on Approval and Installation Requirements for Gas-Burning Appliances, A.G.A. Approval Requirements Committee, which is working on a broad program for requirements to be used by the American Gas Association Laboratories as a basis for tests to determine whether gas appliances should be approved by the A.G.A. and be allowed to use the A.G.A. Seal of Approval.

The revisions to the American Standard Approval Requirements for Clothes Dryers as adopted by the subcommittee have been printed and distributed to all gas companies which are members of the A.G.A. and to interested manufacturers for criticism. Anyone interested in these standards who did not receive a copy may secure one upon application to the Testing Laboratories of the American Gas Association, 1032 East 62nd Street, Cleveland, Ohio. Any comments or criticisms of the revisions proposed by the subcommittee should be mailed to R. B. Harper, chairman, ASA Sectional Committee, Project Z21, A.G.A. Approval Requirements Committee, in care of the American Gas Association Testing Laboratories in Cleveland.

It is expected that the revised edition of the clothes dryer standards will be completed in June to become effective January 1, 1939.

Association to Prepare Standards For Refrigerating Machinery

For the past several months the Refrigerating Machinery Association has been engaged in a broad standardizaton program planned to ultimately include most types of commercial and industrial refrigerating equipment. The first part of the work is already reaching its final stages and involves such equipment as ammonia compressors, ammonia condensers (both vertical and horizontal closed types) ammonia brine coolers (both horizontal closed and submerged types), ammonia liquid receivers, and ammonia mains sizes.

Completion of the whole plan is expected to require from two to three years, and the work is being undertaken by an engineering staff especially engaged for the purpose by the Association. As the various divisions of the standardization program are completed, the recommendations will be published as separate standards. The entire range of standards will probably finally be published in one volume.

British Standards Institution Joins International Association

The British Standards Institution has become a member of the International Standards Association (ISA) as of January 1, 1938. The ISA membership now includes 21 national standardizing bodies.

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